Appl. No. 10/045,287
Amdt. dated December 13, 2005
Amendment with RCE

PATENT

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings of claims in the application:

Listing of Claims:

1.   (Currently Amended) A method of performing a virtual network connection merge, the method comprising:

assembling at least one data unit from data traffic of ~~at least one~~a ready network connection in a plurality of connections;

assigning a relative frequency value to each network connection in the plurality of connections, wherein a higher relative frequency value is assigned to a network connection requiring a higher relative bandwidth;

allocating credits to ~~each~~ready network ~~connection~~connections in the plurality of network connections in proportion to relative frequency values of ready network connections of a same virtual network connection merge, a ready network connection being a connection ready to send a data unit;

determining a chosen data unit to be transmitted to an output channel from the ready network connection in the ready network connections, wherein the step of determining the chosen data unit depends on credit of the ready network connection; and

transmitting the chosen data unit to the output channel.

2.   (Original) The method of Claim 1, wherein the step of assembling at least one data unit comprises:

allocating the data traffic of the at least one data unit into memory cells;

adding the memory cells to cell descriptor (CD) lists until an end of frame (EOF) cell is received, wherein the end of frame cell is used to identify unit boundaries.

3.   (Currently Amended) The method of Claim 1, wherein the calculating step comprises calculating a higher credit for ~~a~~the ready network connection having a data unit

Appl. No. 10/045,287
Amdt. dated December 13, 2005
Amendment with RCE

PATENT

that is ready for transmission, wherein a ready data unit is a whole data unit with memory cells filled with data traffic.

4.　　(Original)　The method of Claim 2, wherein the step of transmitting the chosen data unit comprises:

allocating merge bandwidth for the chosen data unit;

adding memory cells of the chosen data unit to transmit lists; and

transmitting the memory cells of the chosen data unit to the output channel based on information in the transmit lists, wherein the memory cells of the chosen data unit are transmitted until an end of frame cell of the chosen data unit is transmitted.

5.　　(Original)　The method of Claim 1, further comprising:

determining another chosen data unit to be transmitted to the output channel; and

transmitting the other chosen data unit to the output channel.

6.　　(Original)　The method of Claim 5, further comprising performing steps of the method until all data units with sufficient credit have been transmitted.

7.　　(Currently Amended)　The method of Claim 1, wherein the ~~at least one~~ready network connection includes Asynchronous Transfer Mode (ATM) connections.

8.　　(Original)　The method of Claim 1, further comprising:

assigning a bandwidth guarantee to each network connection;

receiving an overload of traffic from a network connection having a relatively low bandwidth guarantee; and

storing the overload of traffic into at least one stored data unit.

9.　　(canceled).

Appl. No. 10/045,287
Amdt. dated December 13, 2005
Amendment with RCE

PATENT

10.   (Currently Amended) The method of Claim 9̶1̶, wherein the determining step comprises:

generating a particular bandwidth shape token for the virtual network connection merge; and

receiving a bandwidth shape token configured to assist in identifying the chosen data unit.

11.   (Currently Amended) An integrated circuit configured to perform a virtual network connection merge, the integrated circuit comprising:

controller circuitry configured to control operations of:

assembling at least one data unit from data traffic of at least onea ready network connection in a plurality of network connections;

assigning a relative frequency value to each ready network connection connections in the plurality of connections, wherein a higher relative frequency value is assigned to a network connection requiring a higher relative bandwidth;

allocating credits to each network connection in proportion to relative frequency values of ready network connections of a same virtual network connection merge, a ready network connection being a connection ready to send a data unit;

determining a chosen data unit to be transmitted to an output channel from the ready network connection in the ready network connections, wherein the step of determining the chosen data unit depends on credit of the ready network connection; and

transmitting the chosen data unit to the output channel.

12.   (Original) The integrated circuit of Claim 11, wherein the controller circuitry is further configured to control operations of:

allocating the data traffic of the at least one data unit into memory cells;

adding the memory cells to cell descriptor (CD) lists until an end of frame (EOF) cell is received, wherein the end of frame cell is used to identify unit boundaries.

Appl. No. 10/045,287
Amdt. dated December 13, 2005
Amendment with RCE

PATENT

13.   (Currently Amended) The integrated circuit of Claim 11, wherein the controller circuitry is further configured to control an operation calculating a higher credit for a the ready network connection having a data unit that is ready for transmission, wherein a ready data unit is a whole data unit with memory cells filled with data traffic.

14.   (Original) The integrated circuit of Claim 12, wherein the controller circuitry is further configured to control operations of:

allocating merge bandwidth for the chosen data unit;

adding memory cells of the chosen data unit to transmit lists; and

transmitting the memory cells of the chosen data unit to the output channel based on information in the transmit lists, wherein the memory cells of the chosen data unit are transmitted until an end of frame cell of the chosen data unit is transmitted.

15.   (Original) The integrated circuit of Claim 11, wherein the controller circuitry is further configured to control operations of:

determining another chosen data unit to be transmitted to the output channel; and

transmitting the other chosen data unit to the output channel.

16.   (Original) The integrated circuit of Claim 15, wherein the controller circuitry is further configured to carry out operations of the integrated circuit until all data units with sufficient credit have been transmitted.

17.   (Currently Amended) The integrated circuit of Claim 11, wherein the at least one ready network connection includes at least one Asynchronous Transfer Mode (ATM) connection.

18.   (Original) The integrated circuit of Claim 11, wherein the controller circuitry is further configured to control operations of:

assigning a bandwidth guarantee to each network connection;

Appl. No. 10/045,287
Amdt. dated December 13, 2005
Amendment with RCE

PATENT

receiving an overload of traffic from a network connection having a relatively low

bandwidth guarantee; and

storing the overload of traffic into at least one stored data unit.

19.   (Canceled)

20.   (Currently Amended) The integrated circuit of Claim ~~19~~11, wherein the

controlling circuitry is further configured to control operations of:

generating a particular bandwidth shape token for the virtual network connection

merge; and

receiving a bandwidth shape token configured to assist in identifying the chosen

data unit.

21.   (Currently Amended) A computer-readable medium carrying one or more

sequences of one or more instructions for performing a virtual network connection merge, the

one or more sequences of one or more instructions including instructions which, when executed

by one or more processors, cause the one or more processors to perform the steps of:

assembling at least one data unit from data traffic of ~~at least one~~a ready network

connection in a plurality of network connections;

assigning a relative frequency value to each network connection in the plurality of

network connections, wherein a higher relative frequency value is assigned to a network

connection requiring a higher relative bandwidth;

allocating credits to ~~each~~ready network ~~connection~~connections in proportion to

relative frequency values of ready network connections of a same virtual network connection

merge, a ready network connection being a connection ready to send a data unit;

determining a chosen data unit to be transmitted to an output channel from the

ready network connection in the ready network connections, wherein the step of determining the

chosen data unit depends on credit of the ready network connection; and

transmitting the chosen data unit to the output channel.

Appl. No. 10/045,287
Amdt. dated December 13, 2005
Amendment with RCE

PATENT

22.   (Original) The computer-readable medium of Claim 21, wherein the step of assembling at least one data unit further causes the processor to carry out the steps of:

allocating the data traffic of the at least one data unit into memory cells;

adding the memory cells to cell descriptor (CD) lists until an end of frame (EOF) cell is received, wherein the end of frame cell is used to identify unit boundaries.

23.   (Currently Amended) The computer-readable medium of Claim 21, wherein the calculating step further causes the processor to carry out the step of calculating a higher credit for a-the ready network connection having a data unit that is ready for transmission, wherein a ready data unit is a whole data unit with memory cells filled with data traffic.

24.   (Original) The computer-readable medium of Claim 22, wherein the step of transmitting the chosen data unit further causes the processor to carry out the steps of:

allocating merge bandwidth for the chosen data unit;

adding memory cells of the chosen data unit to transmit lists; and

transmitting the memory cells of the chosen data unit to the output channel based on information in the transmit lists, wherein the memory cells of the chosen data unit are transmitted until an end of frame cell of the chosen data unit is transmitted.

25.   (Original) The computer-readable medium of Claim 21, wherein the instructions further cause the processor to carry out the steps of:

determining another chosen data unit to be transmitted to the output channel; and

transmitting the other chosen data unit to the output channel.

26.   (Original) The computer-readable of Claim 25, wherein the instructions further cause the processor to perform the steps until all data units with sufficient credit have been transmitted.

Appl. No. 10/045,287
Amdt. dated December 13, 2005
Amendment with RCE

PATENT

27. (Currently Amended) The computer-readable medium of Claim 21, wherein the ~~at least one~~ready network connection includes Asynchronous Transfer Mode (ATM) connections.

28. (Original) The computer-readable medium of Claim 21, wherein the instructions further cause the processor to carry out the steps of:

assigning a bandwidth guarantee to each network connection;

receiving an overload of traffic from a network connection having a relatively low bandwidth guarantee; and

storing the overload of traffic into at least one stored data unit.

29. (Canceled)

30. (Currently Amended) The computer-readable of Claim ~~29~~21, wherein the determining step further causes the processor to carry out the steps of:

generating a particular bandwidth shape token for the virtual network connection merge; and

receiving a bandwidth shape token configured to assist in identifying the chosen data unit.

31. (Currently Amended) A method of performing a virtual network connection merge, the method comprising:

assigning a relative frequency value to each network connection in a plurality of network connections being represented in a first list;

assigning a credit to each ready network connection in the plurality of network connections in the first list in a round robin sequential fashion, a ready network connection being a connection ready to send a data unit;

when a ready network connection is assigned credits substantially equal to its relative frequency value, removing the ready network connection from the first list;

Appl. No. 10/045,287
Amdt. dated December 13, 2005
Amendment with RCE

PATENT

continuing to assign a credit to each <u>ready</u> network connection in the plurality of network connections in the first list in a round robin sequential fashion until the first list is empty, wherein when a network connection is assigned credits substantially equal to its relative frequency value, removing the <u>ready</u> network connection from the first list;

determining a chosen data unit to be transmitted to an output channel <u>from a ready network connection in the ready network connections</u>, wherein the step of determining the chosen data unit depends on credit of the <u>ready</u> network connection; and

transmitting the chosen data unit to the output channel.

32.   (Currently Amended) The method of claim 31, further comprising moving the <u>ready</u> network connection from the first list to a second list, wherein when the first list is empty, moving the <u>ready</u> network connections back to the first list, the method further comprising:

continuing to assign a credit to each <u>ready</u> network connection in the plurality of network connections in the first list in a round robin sequential fashion until the first list is empty, wherein when a <u>ready</u> network connection is assigned credits substantially equal to its relative frequency value, removing the <u>ready</u> network connection from the first list.

33.   (Currently Amended) The method of claim 1, wherein allocating credits to each <u>ready</u> network connection comprises:

assigning a credit to each <u>ready</u> network connection in the plurality of network connections in a list;

when a <u>ready</u> network connection is assigned credits equal to its relative frequency value, removing the <u>ready</u> network connection from the list; and

continuing to assign a credit to each <u>ready</u> network connections in the plurality of network connections in the first list until the list is empty, wherein when a <u>ready</u> network connection is assigned credits equal to its relative frequency value, the <u>ready</u> network connection is removed from the first list.

Appl. No. 10/045,287
Amdt. dated December 13, 2005
Amendment with RCE

PATENT

34.   (Currently Amended) The method of claim 11 wherein allocating credits to each network connection comprises:

assigning a credit to each ready network connection in the plurality of network connections in a list;

when a ready network connection is assigned credits equal to its relative frequency value, removing the ready network connection from the list; and

continuing to assign a credit to each ready network connection in the plurality of network connections in the first list until the list is empty, wherein when a ready network connection is assigned credits equal to its relative frequency value, the ready network connection is removed from the first list.

35.   (Currently Amended) The method of claim 2221, wherein allocating credits to each network connection comprises:

assigning a credit to each ready network connection in the plurality of network connections in a first list;

when a ready network connection is assigned credits equal to its relative frequency value, removing the ready network connection from the first list; and

continuing to assign a credit to each ready network connection in the plurality of network connections in the first list until the first list is empty, wherein when a ready network connection is assigned credits equal to its relative frequency value, the ready network connection is removed from the first list.